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Positron transport in water vapor ZORAN PETROVIC, ANA BANKOVIC, SASA DUJKO, GORDANA MALOVIC, Institute of Physics Belgrade Serbia, STEPHEN BUCKMAN, CASTEN MAKOCHEKANWA, CAMS ANU Canberra Australia, JOAN MARLER, Northwestern University, Evanston, IL USA, RONALD WHITE, James Cook University Townsville Australia — As a first step towards a better understanding of Positron emission Tomography we have undertaken a program to investigate the basic features of positron transport in gases and soft condensed matter. First, a set of cross sections for positron scattering on water molecules is presented. A compilation has been made using the best experimentally measured and theoretically calculated cross sections available in the literature. Second, this set of cross sections is applied to perform Monte Carlo calculations of the positron transport properties in water vapor. Basic trends in positron transport properties as a function of the reduced electric and magnetic fields are addressed using physical arguments. In addition, the thermalization time for different initial conditions of positron swarms is considered. The results presented in this work may be employed for a future optimization of medical diagnostics based on a detailed knowledge of positron interactions with matter.

[X] Prefer Oral Session
[ ] Prefer Poster Session

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